Photographic Processing
P2 Fact Sheet

Utah Department of Environmental Quality

Promoting a Healthy Environment

Introduction

The photographic processing industry includes a large number of diverse establishments processing a wide range of films and papers. The primary waste streams associated with this industry are process bath wastes, color developer wastes, bleach, fix and bleach-fix wastes. Substances of particular environmental concern often found in photo finishing effluents include silver, cadmium, chromium and ferrocyanide.

Pollution prevention and minimization of these wastes, and others, involves improved housekeeping practices, process modifications and recovery and reuse.

There are a variety of ways that you can reduce the amount of waste that you generate and in turn reduce your operating costs.

Potential hazardous waste reduction techniques for photo processors include:

Improved Housekeeping

Good housekeeping measures can greatly decrease the amount of wastes that are generated. To reduce excess waste production:

- Keep tight fitting lids and bungs on containers to prevent loss of chemicals through evaporation or spillage. Keeping lids on containers also prevents contamination with water, dirt or other materials.
- Use spigots and pumps when dispensing new materials.
- Compare process inputs with outputs to identify quantity of materials discharged in wastewater.
- Stop water flow when film processing is halted.
- Dedicate pumps to certain chemicals to reduce cleaning operation wastes.
- Accurately add and monitor chemical replenishment of process baths.

Make sure that personnel are well trained.

- Store products in locations that will preserve their shelf life. For example, store photosensitive materials carefully to avoid damaging them.
- Avoid mixing dry chemicals in an area where airborne particles could contaminate other solutions.

- Never mix different types of waste together. Mixing wastes may make recycling impossible, or make waste disposal much more expensive.

Substitute raw materials

Consider replacing your current raw materials with raw materials that reduce the amount or toxicity of the waste that you generate. Also, take into account the cost of disposal and any special handling requirements when determining which materials to purchase. For example, substitute less environmentally harmful iron-complex bleaches for ferricyanide bleaches wherever possible as well as substituting less toxic metals, such as bismuth, to function as the image carrier in the film.

Process Modifications

- Use squeegees between photographic baths. Squeegees are a simple and very effective method you can use to prolong the life of your baths. Using squeegees will reduce the amount of liquid carried into the next solution. Consequently, your replenishment rates are reduced, your chemical costs are decreased and the rate of contamination is reduced.
- Redesign tanks to convert an existing wash system to a counter current system, to reduce water use and costs.
- Use floating lids. Floating lids on solution storage containers will prevent loss of materials through oxidation, evaporation or contamination. Using floating lids can double the useful storage life of your solutions.

Recovery and Reuse

- Recover silver by one of the following methods: metallic replacement, chemical precipitation, electrolytic recovery, or ion exchange. When electrolytic silver recovery equipment is properly operated, 95 percent of the potential available silver can be recovered. Combining electrolytic silver recovery with in-situ ion exchange can result in more than 99.5 percent silver recovery efficiency.
- Use technologies such as evaporation or electrodialysis to recover metals such as chromium from waste rinse water before treatment.
- Regenerate spent ferricyanide bleach by one of the following methods: ozone oxidation, electrolysis, use of persulfate salts, or use of liquid bromine.
- Recycle spoiled photographic film and paper to reclaim silver.
- Another option for recycling silver is to send your waste waters off-site to a silver recovery business.

For More Information, Contact:

Division of Solid & Hazardous Waste - (801) 538-6170
Division of Water Quality - (801) 538-6146
Environmental Hotline - 1 (800) 458-0145
Pollution Prevention Coordinator - (801) 536-4477